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Address of

HON. S. S. COX,

of New York,

to the Congress of the United States on Coast Defenses, the Navy, and Ordnance.

JUNE 30, 1884.

No hostile fleets, with thund'ring wrath,
Cut short the sailor's day of grace.
—*Longmuir.*

ON THE NECESSITY FOR DEFENSES ON COAST
AND AT SEA.

SPEECH

OF

HON. SAMUEL S. COX,

OF NEW YORK,

IN THE

HOUSE OF REPRESENTATIVES,

MONDAY, JUNE 30, 1884.

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> But war's a game which, were their subjects wise,
> Kings would not play at. Nations would do well
> To extort their truncheons from the puny hands
> Of heroes whose infirm and baby minds
> Are gratified with mischief; and who spoil,
> Because men suffer it, their toy—the world.
> *Cowper.*

WASHINGTON.
1884.

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SPEECH

OF

HON. SAMUEL S. COX.

The House being in Committee of the Whole on the state of the Union, and having under consideration the bill (H. R. 7440) making appropriations for fortifications and other works of defense—

Mr. COX, of New York, said:

Mr. CHAIRMAN: But for the discussion about printing speeches not delivered I would be glad to be relieved from delivering the remarks I propose to make. I would not deliver them at all had not my relation to naval affairs called me to study the questions involved. Nearly five years ago, as a New York member, I urged this House to make liberal appropriations for our fortifications, for guns of larger caliber, and for big ships of the best model and equipment. We may not have delayed in vain, as there is a constant advance in the arts and sciences connected with naval architecture and armaments. Indeed, by no one has this unsettled condition been better expressed than by Lieut. Edward W. Very, in his volume entitled "Navies of the World." From this I read the following:

> During the past twenty years the changes in the material of which fleets are composed have been so rapid and universal that it has been impossible at any time to form a true estimate of the strength of the navy of any maritime power that would be of any value beyond a very limited time. With displacements advancing from 5,000 to 13,000 tons; weight and power of ordnance developing beyond the most exaggerated conceptions of twenty years ago; torpedo warfare springing into existence and developing as a new and special arm; modifications in engines and boilers by which speed has been developed from 12 to 18 knots, and steaming capacity from 2,500 to 6,000 miles; the revolution of naval tactics, and the entire change in the conditions of naval warfare brought about by the development of armor defense and the ram attack—it is only through paying the closest attention and under exceptionally favorable circumstances that naval officers have been able to comprehend the magnitude of the general result.

This bill and substitute came into the House in an unusual form. The bill of the majority asks for about five times as much money as the substitute of the minority. The former asks for $3,070,000, the latter for $595,000. The items vary. It is not unlikely that we can, without extravagance or parsimony, wisely take some suggestions from each. I believe in neither the monitor nor the cruiser system; hence I have so voted. I desire fighting ships of the best class.

Chief-Engineer King gives us in his exhaustive volume on war ships and navies the keynote to a true policy in the upbuilding of our Navy. He says:

> The maritime power of England originated in the commercial wants of the people and become identified with them step by step in their "national progress."

What service I could render in this House on naval matters has been, first, with a view to strengthen our merchant marine, adapting it to the progress of the world in mold and materials; second, to provide defense upon our coasts by means of "great guns" of a caliber suited to that purpose and at least equal to the quality and kind of guns now used by other nations.

I am aware that all the pride of our early achievements on the sea and all the shame of our present deplorable condition have aroused a dormant national feeling in reference to both these subjects.

The question that confronts the legislation of this Congress is: How far can we go in the rehabilitation of the defenses of the country, either by fortifications and guns or by iron-clad war ships and cruisers?

NO URGENT NEED OF A NAVY.

We are told that there is urgent need of a navy. I do not admit the urgency, unless it be found in the maxim, "In time of peace prepare for war." Our peculiar situation renders this semi-barbarous maxim less applicable to the United States than to any other of the great powers of the world. Were we to be embroiled in warfare with any one or more of these powers they must come here to attack us. We have no commerce or colonial establishments to be attacked. We have within our boundaries ample resources both of men and material to carry on a defensive warfare against any of the great powers of Europe or all combined.

Commerce is the bond of peace between nations. I well know that the military strength of a nation, even though unorganized, is one of its best securities from foreign aggression. I know this as well as I know that a commercial nation will hesitate long before it will provoke a war, no matter how great may be its military power. The greater the military power it will have to attack, the longer it will hesitate to declare war or give occasion for warfare. Knowing this, and knowing our I might say almost infinite military resources, I have no fear that any of the great maritime powers of the world are in the least disposed to give the American people a cause for war. Self-interest on the part of such powers sufficiently guarantees this. For the same reason, and I hope also a better one, I have no apprehension that we are disposed to provoke a war with any nation or people.

THE REPUBLIC STANDS ALONE.

Our situation and the spirit and enterprise of the American people are ample assurances that none of the great maritime powers have the least disposition to give us a cause for war.

> The history of the world [says the London Times] has furnished no precedent for the condition of the United States. Hereafter Australia may exhibit a similar spectacle. As yet the North American Republic stands alone. With the conscious power to carve its own destinies belonging to perfect national independence, it combines the Roman peace enjoyed privately and commercially by subject provinces of the ancient Roman Empire. No country in the world has any interest in molesting it. None would dare gratuitously to offer it an

> affront or do it an injustice. Its standing army is the minutest in existence, and General Sherman, who would like it enlarged, does not desire that it should be more than minute. Except for the fear of wild Indians, or native desperadoes, it might disband the whole to-morrow and be perfectly secure. * * * Favorable geographical circumstances must be thanked in part for its immunity from many national burdens and national alarms. Unquiet and strong neighbors compel precautions generally. The United States can not be said to have more than two real neighbors; one too weak to be harmful, the other, which is great enough, possessed by the most ardent determination never to be otherwise than friendly. If even its neighbors had been among the most aggressive, its territories and its population make a solid mass, which would have insured it against attack. * * *

THE DEMANDS OF NATIONAL POLICY.

Endowed as we are with this faculty and boundless resources we need no great armaments for our defense. This fact is recognized by the honorable Secretary of the Navy. In the same report in which he recommends the remodeling of our Navy, he says in respect to "the demands of our national policy:"

> The scope of that policy, as it relates to the maintenance of a military establishment, has been clearly and ably outlined by the late President Garfield, and his judicious words may well serve as guides in any action that we may take to-day. In a speech made in 1878, in the House of Representatives, he said: "The men who created this Constitution also set it in operation and developed their own idea of its character. That idea was unlike any other that then prevailed upon the earth. They made the general welfare of the people the great source and foundation of the common defense. In all nations of the Old World the public defense was provided for by standing armies, navies, and fortified ports, so that the nation might every moment be fully armed against danger from without or turbulence within. Our fathers said: Though we will use the taxing power to maintain a small army and navy sufficient to keep alive the knowledge of war, yet the main reliance for our defense shall be the intelligence, culture, and skill of our people; a development of our own intellectual and material resources which will enable us to do everything that may be necessary to equip, clothe, and feed ourselves in time of war, and make ourselves intelligent, happy, and prosperous in time of peace."

THE VIEWS OF THE NAVY DEPARTMENT.

The honorable Secretary of the Navy says that "with the views of American policy thus expressed the Department is in perfect accord;" and that "it is not now, and it never has been, the policy to maintain a fleet able at any time to cope on equal terms with the foremost European armaments." I ask close attention to the Secretary's words. The appropriations he asks for are not intended to be expended for ships fit to be the nucleus of such a navy as could cope with foreign powers.

In respect to a war with one of the great naval powers of Europe the honorable Secretary says that "the possibility of such a war is not lost sight of; but with our isolated position and traditional peace policy, it is a remote contingency, and we should cherish no ambition to take the lead among the naval powers of the world; certainly not until we again become foremost in the possession of a merchant marine." [Last annual report, Secretary of the Navy, vol. 1, page 8.]

"Any difference," says the honorable Secretary of the Navy, "which would involve us in a conflict with one of the great powers should be the growth of time, affording opportunity for gradual preparation." We may agree at present with the Secretary in his statement of our national policy. We may concur with him in regard to the remoteness of the possibility of a war between the United States and any of the great powers of the world. Such a war "is a remote contingency." We have no reasons of urgency that require any speedy or great preparation for meeting such a contingency.

But in view of this remote contingency, and in order "to assert at all times our natural, justifiable, and necessary ascendency in the affairs of the American hemisphere," continues the Secretary in the report from which I have been quoting, "we unquestionably need vessels in such numbers as fully to 'keep alive the knowledge of war,' and of such a kind that it shall be a knowledge of modern war; capable on brief notice of being expanded into invincible squadrons."

Mr. Chairman, I call your attention to the fact that we are told by the head of the Navy Department that our great and principal need of a navy at the present moment is not for defense, not for war, but only "to keep alive the knowledge of modern war." He says that "the vessels available for actual service are insufficient to give training to the officers and seamen, unequal to the present necessities of the Government"—necessities in which actual warfare is not contemplated—"and unworthy of a great and prosperous maritime state."

THE PRESENT DEMAND FOR A HOLIDAY FLEET.

The language of the honorable Secretary explains why it is that he is so urgent for "cruisers" rather than "fighters." He wants to replace the "worn-out structures of an obsolete type" with vessels more available for actual peace service, and in sufficient number to give training to our officers and seamen. All this pressure, all this urgency for a navy has for its main object this, and nothing more! We are charged with having a total disregard for the safety and best interests of the nation because we hesitate to vote millions of money from the Treasury in order to build, not a navy, but a floating annex to the Naval Academy—a holiday fleet! The urgency of the Navy Department is for "new cruisers." The ships we now have are "obsolete;" they are not fashionable enough for a training flotilla! "Hence," says the Secretary of the Navy, "provision should be made for building new cruisers, with due care and economy, by an annual outlay extending over a considerable period." "At least seven modern vessels should be built in each year until the Government has acquired a new steel navy," at an "annual expenditure of four millions."

The urgency, the great pressure brought to bear upon Congress is in behalf of the officers of the Navy, who are anxious to disport themselves in steel cruisers. This is the near and pressing urgency. They feel the need of training in modern ships, in steel cruisers, in order to be prepared for the very remote contingency of a war with the heavily-armed ironclads of one of the great naval powers of Europe. But it is not the Secretary's policy to build a fleet that would be "able at any time to cope on equal terms" with such a power.

NON-COMBATANT SQUADRONS.

Now, while I have not sufficient naval knowledge to say that we should not direct our attention mainly to providing a navy of steel cruisers for the pleasure and accommodation of our officers, before we embark to any considerable extent in the building of fighting ships, I am nevertheless well satisfied that it would be most unwise to vote $4,000,000 for the construction of seven steel cruisers next year until we have some evidence that the Chicago, the Boston, the Atlanta, and the Dolphin are of the proper type or types to enable our naval officers "to keep alive the knowledge of war." Are these the types of ships that are "capable on brief notice of being expanded into invincible squadrons?"

I am by no means satisfied that a fleet composed of cruisers of these types would not still leave us "a subject of ridicule at home and abroad," if, as the Secretary of the Navy thinks, we are now "justly" such "a subject of ridicule." I do not want to make the American people pay four millions a year without some annual evidence that they are not paying their money for a type of ship that will continue to make the "decrepitude" of our Navy a "subject of ridicule." I do not want to spend four millions a year on steel cruisers of the type now under construction, which even I, who am no naval expert, can see at a glance are not only incapable of being "expanded into invincible squadrons," but are also unequal to cope with first-class merchant steamers, such as the Alaska or Oregon, if these latter were equipped with the armaments with which they are to be provided in time of war.

ADVICE OF THE NAVAL ADVISORY BOARD.

The Secretary of the Navy wants us to give our first and greatest attention to the building of seventy steel cruisers—seven each year—in order to maintain our present complement of officers and sailors in that kind of a cruising fleet or training-school. The naval advisory board, whose advice we are urged by the Secretary of the Navy to follow, "expresses the opinion that the limit of combined efficiency and economy is reached in cruisers of the Chicago type, of 4,500 tons displacement." This board "condemns any policy looking to the present construction of cruisers that shall rival in speed the fastest transatlantic steamers." We are told that the reasons for this policy are: first, that at present less than one hundredth part of the ocean steam tonnage of the world is composed of merchant steamers of exceptionably high speed; second, that in time of war the high-speed merchant steamers would be withdrawn from their ordinary pursuits—that is to say, they would become armed cruisers; and, third, that in order to match such cruisers it would be necessary for us to build vessels with a displacement of at least 11,000 tons, at a cost of at least $4,000,000 for each vessel, "or nearly as much as that of all the seven ships recommended by the board." Is this a progressive policy?

QUALITIES WHICH A CRUISER SHOULD HAVE.

I do not claim for this House the profound wisdom of a naval advisory board in respect of naval affairs, but I do insist that we possess sufficient common sense to perceive the fallacy of these reasons. I would call the attention of the House to some of the views of the Admiral of the Navy in respect to the qualities which a war-cruiser should possess.

Under date of November 19, 1883, Admiral Porter made a report to the Secretary of the Navy, in which he calls the attention of the Secretary to the fact that "in case we should have a war with any foreign nation all ports will be closed against our cruisers so far as obtaining coal or munitions of war is concerned." "Our vessels," he says, "after consuming their coal must either lie idly by until a supply is sent from home or make an effort to reach the United States under sail, with perhaps fuel enough to run a blockade at the end of their cruise." "Without full sail power," says the Admiral, "a ship of war"—cruiser—"would make but slow progress under these circumstances." (See last annual report of the Secretary of the Navy, volume 1, page 390.)

DEFECTS OF THE ADVISORY BOARD CRUISERS.

The Admiral holds the opinion that an effective cruiser "should not only be fitted with a full area of square sails, but she should have all the usual jibs and try-sails, and have light stays between all the masts where the latter could be set," in addition to full steam-power. (Page 389.) He does not agree with the advisory board or the Secretary in respect to the speed of the Atlantic merchant steamers, or that proposed for our cruisers. He says that "a large portion of the ocean commerce is now carried on by swift steamships, many of which average fifteen knots across the Atlantic;" and that "in time of war the greater part of the enemy's commerce would be carried in such vessels." "Now and then," he says, "a comparatively slow steamer might fall a prey to our cruisers, but this would not often happen." The cruisers which the Admiral had then in his mind were the Chicago, the Boston, the Atlanta, and the Dolphin, the types approved by the advisory board; the kind of which seventy are urged to be built at an expenditure of $40,000,000, at the rate of $4,000,000 a year! The Admiral thinks that "now and then" a cruiser of such a type as any of those under construction might make a "comparatively slow" merchant steamer its prey! Are we to be denounced as being opposed to the building of a navy because we do not at once act upon the opinion of the naval advisory board when the highest officer of the Navy not only fails to indorse its recommendations but shows that if its recommendations were carried out we would still be as far as we are at this moment from having effective cruisers, much less fighting ships?

CRUISERS INFERIOR TO ENGLISH MERCHANT STEAMERS.

Admiral Porter tells the Secretary that "nearly all the European steamship lines, Messageries, Peninsular, and Oriental, &c., are composed of large and fast vessels, capable of overcoming the resistance of the heaviest seas, which would swamp a vessel of small dimensions attempting to force her way in chase." (Page 390.) The Admiral regards it as absurd to apprehend a war between England and the United States, "since their interests are so mixed up in commercial enterprises." But in the event of such a war, he says that "most of the fast steamships of Great Britain would be withdrawn from commerce and armed with heavy batteries." He says "the ocean would swarm with these converted merchant steamers, and they would effectually control it." Why does the Admiral make this statement? Because he does not regard the proposed steel cruisers—those being built and those proposed—as effective cruisers. "In case of such a war," he asks, "how long would it take for a steamship like the Oregon or the Alaska [English merchant steamers] to overhaul and capture small 'commerce destroyers?'" Let the advisory board that "condemns any policy looking to the present construction of cruisers that shall rival in speed the fastest transatlantic steamers," give us a satisfactory answer to this question before we commit Congress to the policy of building seventy ships of war each inferior in speed and cruising and fighting capacity to existing merchant steamers.

ENGLISH TYPES OF CRUISERS.

For my part I would prefer to expend $4,000,000 for one first-class war vessel that would be able to overhaul the Oregon or Alaska, and merchant steamers of that type when armed as cruisers, than have a dozen such cruisers as the Chicago, Boston, Atlanta, or Dolphin, for the same money. I have no confidence in the slow-speed policy of the advisory board in this age of high speed and scientific advancements. The steel cruisers which we are now building are already behind the requirements of the day. I risk nothing in saying this when I can point to such British merchant steamers as the Oregon and Alaska. These are types of all large British merchant steamers that are hereafter to be built. None are to be inferior to these. Most of those yet to be built will surpass them. The coal capacity of such steamers would be, as the Admiral says, "tremendous." "They would carry six months' provisions and their commanders might laugh at Atlantic seas." Courtesy to the naval advisory board and the head of the Department alone prevents the Admiral from saying that commanders of such steamers would also laugh at such cruisers as the Chicago or any of those recommended by the board. We who have no technical naval knowledge can easily see that our steel cruisers, the Chicago and the others, are a mistake. They are merely "dress-parade" or "review" ships. They are not capable of effective cruising service in war-time.

THE AMERICAN TYPE OF CRUISER.

"Take the Chicago for example," says Admiral Porter; "it is said she will have only 14,000 square feet of canvas in her principal sails. Any seaman knows that so small an amount of canvas can only be considered 'auxiliary,' and would only propel the vessel through the water in a very fresh breeze." "With the very peculiar rig of the Chicago, without bowsprit and jibs projecting beyond the bow, no vessel would work under sail in smooth water, much less in a heavy sea." The Chicago has not coal capacity, even if possessed of sufficient speed, for ocean cruising in time of war. A cruiser should be able to keep the sea. How can a ship do that if she has neither coal capacity nor full sail-power? It is not proposed to build cruisers of such capacity or power. "I am not," says Admiral Porter, "an advocate for extremes, but am certain that no ship will be a first-class cruiser unless she has sail enough to send her thirteen knots through the water off the wind and ten knots by the wind. That is the speed of our old first-class frigates and ships of the line with their full bows. The finer lines of to-day ought to do better." He considers that modern cruisers, "with the enormous weight of boilers and machinery carried low down," have "a stability not possessed by the old-fashioned sailing ships of war;" and that "they could carry top-gallant sails when the latter would have to take a reef in the topsails."

THE IMPORTANCE OF SAIL-POWER FOR CRUISERS.

Before we go further into the building of cruisers, would it not be just as well to inquire into the possibility of constructing a ship with power under steam to overhaul the Oregon and ships of that class; and with sail-power capable of sending her through the water at a speed at least equal to that made by the old-fashioned first-class frigates with full bows and limited canvas-spreading stability? The Admiral illustrates the importance to a war ship, especially a cruiser, of full sail-power. "I will," he says, "suppose a case of two ships of war meeting at sea, of equal size and weight of metal. The machinery of both vessels may be injured, and both may have to depend on their sails. The one that is the best rigged and with the position of the center of effort of the sails so fixed that the steamer will work as well as the old-fashioned sailing ships (which can be accomplished) will sail around the other vessel and compel her to surrender." We are told by the Admiral that the desired result "can be accomplished." Why then should we spend $4,000,000 a year for the next ten years in building vessels like the Chicago, with insufficient coal capacity for war cruising and a rig under which "no vessel would work under sail in smooth water, much less in a heavy sea;" a rig that "would only propel the vessel through the water in a very fresh breeze?"

"It may be argued," says Admiral Porter, "that the proposed ships will not be required to maneuver, and that they will always work in important cases under steam." This argument might apply to heavy ironclads, but certainly not to cruisers. In respect to the latter he well says that "it is necessary to guard against every contingency," and that "even in time of peace every effort should be made to economize coal, the careless expenditure of which eats up the public treasure." "What a steamship consumes in coal would in a few years buy a new vessel." The Brooklyn is a very much smaller ship than the Chicago, yet this old-fashioned vessel can spread 8,000 square feet of canvas more than is intended for the Chicago.

Let us at least approach the best foreign types. Those now proposed are neither superior in speed nor equal in fighting capacity to ships designed twenty years ago.

When England and France assumed a hostile attitude to the United States during the late civil war, Congress appropriated money for 65,890 tons of fast steamers, "real commerce destroyers"—(I still quote from Admiral Porter's report to the Secretary)—"all larger than the proposed Boston class, and eleven of them as large or larger than the proposed Chicago." "Had these vessels been built of iron" (as they ought to have been), says the Admiral, "we might not at this day have been complaining of a decayed navy, since, if properly taken care of, they must still be serviceable." How many millions has Congress appropriated to maintain a navy since that time?

THE UTTER FOLLY OF A NON-COMBATANT NAVY.

Why was this mistake made? What party is responsible for not completing this fleet? for leaving most of these ships to rot on the stocks? Is it not the party that has squandered over $160,000,000 on our Navy Department since the close of that war? Are we to still follow the plans of that party for building a navy? Do not the statements of Admiral Porter show the utter folly of building a cruising fleet of the type of the Chicago and the others now under construction? "The Dolphin class of vessels," he says, "could do little in such weather as one meets with in winter on the Atlantic, although to the great ocean steamers such weather is encountered with nearly the same ease as our steamboats make the run between Newport and New York." He has little, if any, better opinion of vessels of the Boston or Atlanta or even the Chicago type as cruisers. None of them would, in his opinion, be a match for a well-armed merchant vessel like the Oregon or Alaska. And of course it is only as cruisers that our unarmored steel vessels are proposed to be commissioned. None of them dare show a broadside to any armored war ship.

THE QUESTION OF NATIONAL DEFENSE.

Mr. Chairman, this question of national defense is a matter in which it behooves us to "make haste slowly." So far as I am able to judge, the naval advisory board has failed to submit a plan for the reconstruction of our Navy that should be adopted. This is certainly the case in respect to the cruisers, the only ships for which any great pressure is being made on Congress. It is proposed to make these the great feature of our Navy. The ironclads are merely incidents. In respect to the latter, their efficiency depends on the as yet unsolved problem of how to cast great guns in our founderies that will equal in range and power those now made in Europe. The ingots and the projectiles for such guns are still a matter of scientific speculation and experiment. In this condition of affairs is it not our duty to hesitate before we throw away millions of dollars wrung from the people by onerous taxation? Let us insist on having thorough investigation into the best system of offensive and defensive armaments before we squander any more public money or bind ourselves to anything that there is reason to doubt might not prove the most effective. I am willing to devote a reasonable sum of money annually for experimental purposes. We, of all nations on earth, can best wait for the results of such experiments. I am willing to build cruisers to maintain "a knowledge of war" among our officers and seamen when a plan is submitted to Congress for effective ships. I want to be committed to such ships rather than to vessels fit only for holiday naval excursions to the sunlit shores of the Mediterranean. I want something more than handsome pleasure yachts for commanding officers. Duty to the tax-payers of the country requires us to at least wait for some satisfactory results from the Chicago and the other steel cruisers now in process of construction before we undertake to spend $4,000,000 a year in increasing our cruiser fleet. The common sense of the country is entitled to more respect than this affected rage for a navy that has for its inspiration the depletion of the "surplus" rather than the completion of effective ships and proper coast defenses.

GREAT GUNS.

The Navy Ordnance Bureau is now constructing at the Washington navy-yard 6-inch, 8-inch, and 10-inch guns. They are of forged steel.

The best guns for our naval service are made wholly of steel and vary in caliber (or diameter of bore) about as follows: 5, 6, 7, 8, 9, 10, 10½, 11, 12, 15, 16, and 17 inches. The capacity to manufacture such guns in the United States is limited at present to the total construction of 5 and 6 inch guns, and to the machine work up to and including 10½ inch on other guns.

The guns we are making are all breech-loaders. These are designed to be as powerful as any guns of their caliber made abroad.

The steel for the 6-inch guns is made in this country, at the Midvale Steel Works, near Philadelphia. The steel for the larger guns could not be procured in this country, as none of the steel manufacturers had sufficiently heavy hammers to forge the large ingots required. The Ordnance Department was forced to buy this steel abroad. It was procured in England, from Whitworth, and from Cammel & Brown. One of the 6-inch guns has been finished. It has been proved at the experimental battery at Annapolis. The results show that it is equal to the best gun made abroad of its caliber.

May I be allowed to say that I had the honor to fire it off? Here is a portion of the shot or shell. [Exhibiting it.] It was so well aimed that it impacted another similar 100-pound shot. The charge was thirty-five pounds of powder of improved kind. I will not say how much and how far I retired to shoot this gun. But its thunder still rings in my ears. Other Congressmen were there—General GOFF and Judge PERKINS, who, being well protected, saw me fire it behind a hill, while they peeped through holes in a big log battery.

The largest Krupp gun is about 17-inch caliber, nearly three times the size of the gun I fired. It is possessed by Germany and will throw solid shot thirteen and one-half miles. Its projectile weighs 2,200 pounds. Its charge of powder is 1,000 pounds. One-hundred-ton guns made by Armstrong are not now afloat except on Italian ironclads—the Duilio and Dandolo. But guns of this size are now being made for England. Indeed, all governments are rearming. Guns are changing. They are doubled in length.

RECENT PROJECTILE DEVELOPMENTS.

Unarmored cruisers are of no service for the defense of ports. To have any chance of success against an attack from England, France, Italy, or Germany a powerful iron-clad fleet of vessels carrying guns upwards of 10-inch caliber is necessary. Should we have such a fleet? Not large, unwieldy ironclads for foreign service, but gun-vessels, carrying a small number of protected guns of large caliber up to sixteen inches; vessels capable of high speed for a reasonable length of time, of small draught and quick turning power. A fleet of such ships would cost comparatively little. They could be moved from point to point, and their presence would render any port secure against the combined attack of all the ironclads of the world that could be brought across the ocean against us.

Another mistake of these unarmored cruisers is not only their lighter guns, but their inability to keep out of range of the projectiles of the machine-guns which form a large part of the armament of a modern ironclad. By machine-guns I mean such guns as are made by Hotchkiss, an American, who, finding no market for his productions at home, went to France, established his factories, and now supplies the world with guns of from one to three inches caliber, capable of firing projectiles from twenty to forty times a minute. The lightest of these guns would pour their rain of fire through and through the sides of these steel cruisers at 1,000 yards' distance. The heavier calibers could send twenty shots per minute through four inches of armor.

The new ironclads of Europe carry as many as thirty of these destructive weapons. Should one of the "cruisers" meet a vessel of this kind, its light sides would soon be a sieve of holes from the fire of the machine-guns alone.

This machine-gun fire is a development of the last three years. Intelligent naval men agree that it is bound to completely change the system of maritime warfare. They say that it will be impossible for an unarmored ship to live against such a furious fire. Ships must be armored to protect men, magazines, machinery, and guns against these new machine-guns alone.

A gun capable of firing a six-pound shell which can pierce four inches of steel, and with a range of four miles, would have seemed impossible three years ago. But when such a gun can be fired twenty times a minute, and when a vessel has thirty of them, that is, a capacity of six hundred shot per minute, one of the great changes necessary in naval warfare and in the protection of ships is strikingly apparent.

I am told that the 6-inch guns of the steel cruisers will pierce ten inches of iron, and the 8-inch guns fifteen inches of iron. This penetration may possibly get through the armor of the second-class ironclads of foreign navies. But these guns can be fired only very slowly—possibly one shot in three minutes with the 8-inch guns, and one per minute with the 6-inch gun. Hitting an object at sea is a difficult matter. In the smoke and excitement of action it is hard enough to hit on land; but with the unsteady platform of a ship at sea, the confined space in the battery, and a quickly moving target, many shots must miss their mark. However courageous officers and crew may be they would stand but a small chance of getting in one lucky shot, while the unprotected sides of their ship are but as paper for a protection against the rain of projectiles from the new machine-guns.

We must have ironclads to protect our ports; ships clad with light armor to keep out machine-gun projectiles, and with their vitals protected by thick plates of steel, strongly backed with solid oak, so as to be impervious to the shot of any gun that may be likely to be brought against them.

THE NEW POWDER.

Powder plays an important part in gunnery and war. Perhaps the new powder referred to by the gentleman from Michigan [Mr. HORR] may take its place in the economy of explosion.

Perhaps the new Krupp gunpowder may come in to displace our present black compound. It is within my own observation that there is at the Annapolis experiment yard a new powder, invented by Captain Folger, working wonders and making dynamite problematical. Get a powder with thinner smoke, with a faculty to disappear quicker, or obtain such a relative proportion of ingredients as to make a greater degree of carbonization of the wood from which the charcoal is made, and you may change the gun by changing the chemical conditions of the explosive substance.

COMMENDABLE CAUTION.

The House may take pride in its caution and economy. We need heavy vessels on the ocean; and we require big guns on them and on the land. Rear-Admiral E. Simpson as president of the Navy Advisory Board, in a letter dated April 11, 1884, endeavored to prefer the fightless cruiser to the armored vessels of fighting quality; but truth crept almost unaware on his caution when he gave reasons paramount for the armored ships. He really favored one armored vessel to be under constant construction. He says, as to the construction of such a vessel, that it will take three years; and the cost would be $2,500,000. One such vessel is worth a half-dozen of flighty holiday cruisers. Hear what he says:

> The length of time required for such constructions is from three to five years. They are very costly and will involve much study and careful preparation; besides the selection of a type will be a matter requiring much deliberation.
>
> In relation to the last point—the selection of a type—I submit general dimensions and some particulars of two armored vessels, which represent the most advanced ideas of the present day. One of these would most probably be the character of the vessel that would be recommended by such a body as the advisory board.
>
> Her Britannic majesty's steamship Imperieuse, not yet completed, was commenced in 1881. She is called an armored cruiser, and is intended for service on foreign stations where fast unarmored ships may have to be opposed and where second-class ironclads may have to be engaged. Her dimensions are as follows: Length, 315 feet; beam, 61 feet; draught, 25 feet; displacement, 7,400 tons; indicated horse-power, 8,000; speed, 16 knots.
>
> The battery will consist of four 9.2-inch guns, each mounted in an armored barbette, and six 6-inch guns in broadside. The barbettes are arranged one forward, one aft, and the others abreast of each other at the sides amidships; the heavy guns are thus situated at twice the height from the water that they would be in a turreted ship, and can be fired three together in any direction. The speed and armament here described does not greatly exceed that of the Chicago, but the difference in displacement of 2,900 tons admits of the following armor: Throughout the length occupied by the machinery and boilers (139 feet), the sides are protected by 10 inches of compound armor for a depth of 8 feet; the

deck over this is 1½ inches thick; bulkheads of plating 8 inches thick run athwartships at the forward and after extremities of the side armor, thus forming a citadel inclosing the machinery and boilers. Forward and abaft of the citadel, at the level of its lower edge, extends a protective deck 3 inches thick, sloping downward to the sides, as in the Boston and Atlanta. The barbettes are 17 feet in diameter, and are armored with 8 inches of steel, which protects the machinery for turning, elevating, and loading the gun, and an armored shute leading to below the armor deck makes the passage of ammunition safe and rapid. The pilot tower is protected by 10 inches of armor.

Contrasting the protection afforded by the armor above stated with the vulnerability of the Chicago, the advantage of the increased displacement of the Imperieuse becomes apparent.

Another type of vessel that would come up for consideration is the turreted ship Riachuelo, just completed for the Brazilian Government by an English firm on the Thames. Her dimensions are as follows: Length, 305 feet; beam, 53 feet; draught, 20 feet; displacement, 5,700 tons; indicated horse-power, 6,000; speed, 16 knots.

The armament consists of four 9-inch guns in two turrets and six 6-inch guns on the upper deck. There is an armor belt of eleven inches thickness covered by a two-inch deck, and the turrets have ten inches of armor.

The armor protection is by no means so complete as that of the Imperieuse, nor is the arrangement of the battery so effective, but, on the other hand, the speed is greater and the displacement is 1,700 tons less.

These instances are cited to show that a board can not, except after the most careful study and examination, decide upon even the size and general dimensions of an armored vessel best suited for our purposes. Therefore, in suggesting the form for an act of Congress which will best carry out the recommendation I make in this communication, and estimating the time required for completing the vessel as three years, I would propose that the authority should be given somewhat in the following form, namely:

For the construction of one armored vessel of not exceeding 7,500 tons displacement, $1,000,000; such vessel to be constructed under the same conditions as prescribed for the construction of the steel cruisers, and its armor and armament procured at a total cost not to exceed $2,500,000.

IMMENSE FOREIGN VESSELS.

Lieutenant Very gives in his volume a list of the vessels of various nations. From this I will mention a few of the larger ships and their characteristics.

The largest ironclads are the Italian ships Italia and Lepanto, 13,480 tons, 15 knots, 21 inches steel backed with 4 feet of oak; Dandalo and Duilio, 10,650, 14 knots, 24 inches steel backed with 4 feet of oak; all four armed with four 17½-inch 100-ton guns and with four 4¾-inch guns. In addition to these Italy has sixteen ironclads of smaller size, but each stronger than anything we have.

Of British ships the Inflexible is of 11,500 tons, has 24 inches of compound armor and a speed of fourteen knots, carrying 16-inch guns. The Ajax is of 8,492 tons, has 19½ inches of compound armor, speed thirteen knots, and carries four 12½-inch guns. The Devastation is of 9,157 tons, has 13½ inches of compound armor, speed fourteen knots, and carries 12-inch guns. The Dreadnaught is of 10,886 tons, has 15⅝ inches of armor, speed fourteen knots, and carries four 12½-inch guns. Great Britain has fifty other vessels of war clad with from 5 inches up to 19½ inches of armor.

Of French ships the Admiral Duperre is of 10,315 tons, has 23 inches of armor, and carries four 13½-inch guns and fourteen 5½-inch guns, with a speed of fifteen knots. The Dévastation is of 9,630 tons, has 16½ inches of armor, carries six 12¼-inch guns and eight 5½-inch guns, with a speed of fourteen knots. France has fifty-three other war-ships clad with from 5 inches to 16½ inches of armor.

Of German vessels the Kaiser is of 7,440 tons, with 11¼ inches of armor and a speed of fourteen and a half knots, carrying eight 10¼-inch guns and one 8¼-inch gun. The Prussian is of 6,748 tons, has 10½ inches of armor, with a speed of fourteen knots, carrying four 10¼-inch guns and two 6¾-inch guns. Germany has twenty other war ships clad with from 3 inches to 11½ inches of armor.

Of Japanese vessels there are the Foo-Soo-Kioan of 3,718 tons and 9 inches of armor, with a speed of thirteen knots, carrying four 9½-inch guns and two 6¾-inch guns, and four others with 5 inches of armor.

Chili has the Almirante Cochrane of 3,430 tons, 9 inches of armor, speed thirteen knots, carrying six 9-inch guns and two 4-inch guns; and two other ships with 5½ and 9 inches of armor.

The New York Times has given a description of the new British-built Brazilian man-of-war. I insert it here for our admonition:

> The Brazilians have just added to their navy a British-built ironclad—one of the most formidable vessels afloat—which has a speed of seventeen and a quarter knots. The Chicago can carry eight hundred tons of coal, and burns it so fast that it will last only six and a half days. The Brazilian ironclad carries the same amount of coal, but burns so much less than the Chicago that she can steam continuously for twelve days. The Chicago will have no guns fit for a modern cruiser, for the reason that there is not a foundery in this country that can make an 80-ton rifle, much less a larger gun, while the Brazilian vessel is more heavily armed than any vessel afloat except the new Italian ironclads. She can fight, chase, or run away from an enemy; but the Chicago can escape only from a slow antagonist, and can fight nothing more formidable than a merchantman.

MILLIONS SQUANDERED UNDER PRETENSE OF BUILDING A NAVY.

We have been without a navy for almost twenty years. In all that time the party in power has not made one honest effort to build a navy. It has enriched some parties by squandering millions of money under the pretext of building a navy. And now when we refuse to adopt this dishonest policy are we to be cited as being opposed to the building of a navy? Oh, no, my friends! You can not charge us with opposition to a navy. Our opposition is not to a navy, but to a fraudulent navy, a sham navy, a navy that can not fight, that can not cruise, that can not cope even with a good merchant steamer of modern type. Our opposition is against jobs. We want to begin at the foundation; to build anew rather than to go on developing the obsolete. Our navy-yards are useless for legitimate purposes. They have degenerated into political machines. Our gun-founderies are yet to be built. Everything requisite for a navy or for effective coast defense has yet to be designed. We have to build from the bottom up when the designs are submitted. All plans submitted are immature. Everything is in embryo except the "surplus." That is ready; and so are the men who are anxious to go into it "up to the elbows." To get a "big grab."

PROTECTION OF HARBORS AND COAST.

But it is said, we must be prepared for war. Be it so. Let us now enter upon that preparation. Let us do whatever is necessary and proper to that end, the most necessary and the proper first. Is the protection of our commerce included in this necessity? No. What then? The protection of our harbors and coast? Yes. This, then, is the first necessity.

I have not been averse to proper precautions and timely appropriations and appliances to build guns for the protection of our coast. Long since, in a speech on the 12th of December, 1879, on the fortification bill, I showed the exposed condition of New York and other large coast cities. I urged action in the making of defenses on the coast. What is recommended by one of the Senate amendments I proposed then. I favor the same wise forecast and provision now. I shall, with permission, append the remarks I then made.

Our defenses by "great guns" is the most necessary thing. In what shall this defense consist, if not in guns to meet those of other nations? Is it in forts, guns, floating batteries, torpedoes or rockets, gunpowder or dynamite? Does any gentleman know any better mode of defense now? Has military science yet determined? If not, let us pause. It is already known that no ship can float with steel armor thick enough to be impenetrable by shot fired from the best guns. In a contest between steel-clad ships armed with such guns, it is simply a question of gunnery, courage, and maneuvering as to which shall sink, disable, or capture the other. It is the same question as in the days of wooden ships and 32-pounders. To fight a naval battle to-day a nation must have steel-clad ships and modern guns. What will be the armor of to-morrow? To defend a harbor against ships as now equipped, we must rely on guns of equal range and force with those on the attacking ships. However large our navy might be, land defenses would still be necessary. The gun is the main thing to be considered. Therefore let us attend to the main thing and the necessary thing first. If we can defend our coast and harbors, and have no commerce but the enemy's to look after, can we not rely on American skill to provide the "destroyers" when the occasion comes for havoc upon the defenseless, white-winged messengers of commerce? We have seen how powerless ironclads and the best guns of the time were for the protection of merchant ships against swift wooden cruisers like the Alabama. Speed and not fighting qualities is the main requisite for commerce-destroyers; propelling power, not engines of war; flight from battle, not courage; dashes at the defenseless instead of at the defenders. It is a very easy matter to equip commerce-destroyers. The maritime powers of Europe, especially England, know how easy. Their commerce is far more vulnerable than any of our ports would be when defended by approved artillery.

DESTROY CRUISERS RATHER THAN COMMERCE.

I am not inclined to favor the destruction of commerce. If we must have "cruisers," let them be of a class that can overhaul and destroy the cruisers of the enemy. If the military policy must still be maintained in this late day of the Christian era, let us have ships that will be more eager to meet men-of-war than merchantmen. I would still maintain some of the spirit of chivalry to ameliorate the rigor of war. Let our naval commanders have ships in which they can emulate the achievements of the historic Porters, Hulls, Decaturs, and Perrys. They commanded fighting ships such as the Essex, the Constitution, the United States, the Wasp, the Hornet, and the Enterprise. These ships were equal to the best of the period. Each of these compelled, in single combat, the surrender of a British war-ship. Here is a list of a few of the conquests of our old fighting ships:

Date.	American vessel.	Guns.	British vessel.	Guns.
Aug. 13, 1812	Essex	32	Alert	20
Aug. 19, 1812	Constitution	44	Guerriere	49
Dec. 29, 1812	Constitution	44	Java	49
Oct. 25, 1812	United States	44	Macedonia	49
Oct. 18, 1812	Wasp	16	Frolic	22
Feb. 24, 1813	Hornet	18	Peacock	22
Sept. 5, 1813	Enterprise	14	Boxer	18

I want our naval officers to have ships in which they can emulate Perry, who, with a small squadron mounting only forty-four guns, captured a British fleet carrying seventy guns, not allowing a single ship or flag to escape. If we are to have a navy, let it be one that can achieve such victories as this, so that it may be said of us as was said in the war of 1812–'14:

> Have we not accomplished more than did Spain with her "Invincible Armadas," than did Holland with her De Witts, Von Tromps, and De Ruyters; than France could achieve when she was in the zenith of her naval power; than did Great Britain with her Nelsons, Rodneys, Howes, and St. Vincents? The naval annals of England furnish no instance in which every vessel belonging to a hostile fleet was captured.—*Annals of Congress*, Thirteenth Congress, 1813–'14, volume 1, page 1240.

It takes time and money to build ships of the modern type that will accomplish such victories. We have both of these. But is there any pressing necessity for cruisers that can neither chase nor fight?

THE FLEETING FASHIONS OF NAVIES.

How long will steel-clad navies be the fashion? Does any gentleman know? Will they be popular if the dynamite air-gun or rocket should prove to be a success? Imagine a squadron of great ironclads like the English Warspite, Impérieuse, and others of from 7,000 to 10,000 tons displacement off New York Harbor, and a swift "mosquito fleet" in the harbor, armed with dynamite guns and rockets, with steam up and ready to dash out upon the enemy at night! Would not the big ironclads be as vulnerable before such a mosquito fleet as an unwary traveler who had provoked the occupants of a hornet's nest? Why this haste when the modes and munitions of warfare are in such marvelous evolution?

DYNAMITE AS A DIFFUSER OF THE GOSPEL OF PEACE.

It has been claimed for gunpowder that it has been not only a great civilizer but also that it has contributed in no small degree to the spread of the Gospel. We may, I think, confidently claim higher civilizing capacity for dynamite and credit it with considerable power for diffusing the gospel of peace among the nations. All that is necessary to the accomplishment of these grand objects is the invention of a proper destructive projectile-machine or engine. Can we doubt that American ingenuity, using the "elements of subtle flame," will not soon supply this want? If any incentive is necessary, let us, in the interest of civilization and peace, vote for the offer of a large reward to the inventor of a dynamite cannon, catapult, ballista, arrow, or rocket of sufficient range to engage an enemy armed with the best gunpowder artillery.

DYNAMITE EXPERIMENTS.

A week ago dynamite was the terror of the world. It may be still. But who can tell what a day may bring forth? Read what is here sent me from our dynamite experimental grounds. I have at home the photographs of this at present ineffectual experiment:

> Much has been said lately about the distructiveness of dynamite, some people going so far as to assert that a few pounds exploded on the side of an ironclad would shatter the neighboring plates and crush in the side. Were this true, leaving out the difficulty of placing the charge in the right place, the great expense necessary to construct heavy ordnance might be saved, and the utility of heavy armor seriously doubted.
>
> The unfounded assertions of persons interested in the dynamite gun have given a sense of security to many which the results obtained at Annapolis do not warrant.

The target was composed of ten iron plates, bolted against twenty inches of oak, a structure of much less strength than the side of the weakest of modern ironclads. The experiments commenced by firing a few pounds of dynamite several feet away, and as no effect was produced the distance was decreased and the charge of dynamite increased until twenty pounds were fired in direct contact with the target; the effect then was only a slight indentation of the plate.

The charges of dynamite were then increased until seventy-five pounds were exploded in contact with this effect: an indent of seven inches deep and three feet in diameter, the outer plate slightly cracked and the bolting considerably strained, but not so as to cause the target to fall apart. This was after two hundred and sixty-five pounds had been fired against it in all, no repairs having been made in the intervals.

The proposition has been made to fire the dynamite in shells, but the shell of the 100-ton gun only contains about eighty pounds.

The effect against the side of a modern ship armored with steel plates of from ten to twenty-four inches in solid thickness, backed with from fourteen to fifty inches of solid oak, can be estimated as nil. A single shot from the gun you fired the other day would have completely pierced such a target and probably shaken it to pieces.

NAVAL ARCHITECTURE AND EQUIPMENT.

Mr. Chairman, ship-building, especially the building of war ships, must always be experimental work. Naval architecture is not yet an exact science. Construction and stowage are still in theory. Experts differ with great acrimony on these matters. You may build on the most approved theory of construction, and for some unaccountable reason fail of success. If you succeed in your architecture, there still remains the problem of "stowage." The stowage of a ship has reference to stability, speed, easiness of motion, and economy of space. You must distribute your ballast and other disposable weights so as to increase the stability of the ship and maintain her upright position. You increase this stability by increasing the depth of the center of gravity below the center of buoyancy or displacement. You will understand the difficulty and importance of stowage when you call to mind the rule that any weight influences the position of the center of gravity of a ship in exact proportion to its distance from that point—a small weight at a certain distance producing the same effect as double that weight at half the distance. We must consider also the momentum of the weight in motion, as when the ship is pitching or sending.

The science of naval architecture and equipment is not yet laid down in the books. It involves undecided questions of physics and the developments of chemistry, more than progress in navigation. We can better afford to await these developments than any other maritime power on earth.

PLANS TO GET AT THE SURPLUS.

Objections are made to cutting down our surplus revenue. Plans for the most wasteful extravagance of public money are boldly introduced in Congress. Every excuse is made that can be invented to ward off an issue on financial economy and moderate revenue. This sudden demand for a useless cruiser navy is one of the excuses to do this, to keep up the taxes. There are men in this country who, if clothed with the power, would not hesitate to plunge the country into a foreign war, just to prove to the people how much we need a great navy. Does it not look very suspicious that this cry for a navy was not raised until we became incumbered with the "surplus," and reduction of taxation became the inevitable issue?

SHOW THE NATIONS HOW TO LIVE AT PEACE.

I do not care to spend our surplus without results. God save the Republic from the machinations of men who are raiding it! It behooves the country to see that they are not clothed with power to accomplish their designs. I prefer to cultivate the arts of peace rather than to promote warfare. I adhere to the doctrine of the fathers that "the welfare of the people is the great source and foundation of the common defense." We need no great standing armies or navies or commissioned cruisers in time of peace. We have ample time to devise and execute plans for defense in the very remote contingency of a foreign war, if the affairs of state are intrusted to those whose endeavor it will be to cultivate amity with the nations and extend our commerce. No great nation desires aught but amity with us. God has blessed us in position and in the endowment of almost infinite resources of power. We sit under the vine and the fig-tree, none daring to make us afraid. Does He not say to us in Holy Writ, that a time will come when men shall beat their spears into plowshares and their swords into pruning-hooks, and when the nations will learn the arts of war no more? Is it not time at this closing nineteenth century of the Christian dispensation for some of the nations to move forward to the hastening of the promised day of peace? Are we to continue always in the unholy strife of nations, we who are blessed with all the power to inaugurate the glorious era of peace on earth and good-will toward men? Why should we not urge on the work of the Peace Congress? Why should we not urge upon the army-ridden masses of Europe the doctrine of international arbitration, rather than follow the barbarous methods of great armaments? Let us show to the nations how to live at peace with great and powerful neighbors. Let us show the nations by our example that when the people dethrone despots and make their own laws, and are just, industrious, and intelligent the day will have come to them, as it has come to us, when a standing army or a great navy is no longer a national necessity.

THE SCIENCE OF WAR.

It is not for me to say what is the true science of war, nor is it for me to instruct in the art of war. At best, it is said that war is human butchery. If our admirals and generals must have war as a profession, if they must deal in blood, let them go to the shambles and learn of the butcher a lesson of skill and humanity. He does not destroy his victim by piecemeal or mangle him in detail. He is more merciful; he understands his business better; with well-directed aim he seeks a vital part; having reached that his work is easy.

Therefore, to lessen human warfare let us cultivate the highest chemistry and make the most deadly armament. I but repeat the words of one of our early legislators when I say that although we may be weak in aggressive power, in capacity for defense we are invincible. If in self-defense cowards become brave and the weak are clothed with more than mortal strength, it needs no prophetic vision to perceive what our country could accomplish if invaded by a foreign foe.

Self-defense is original, native, indelible in the human heart. As was said by the Roman orator, "It is not formed by habit, nor induced by custom, nor written, like the variable laws of nations, on brass or marble, which are corrupted by time, but engraven by the finger of the Creator in the bottom of our souls, and immortal as our existence."

I am not visionary enough to suppose that we can at once inaugurate peace and civilization among the nations. But I do hold it to be our duty to move in that direction; to use all our own influence and expend our best efforts in that direction with at least as much energy as we display in warlike preparations. I hold that it would be a better, safer, and more honorable policy for us to urge a general international disarmament than to try to emulate the slaughtering policy of European tyranny. I challenge any man who professes Christianity, who believes in the Word of God, to question the soundness of these views. I do not say that we may not need to exercise our military power. I think it is possible that we may. But it is only a possibility.

Holding to this possibility I believe it to be my duty to vote for the execution of any plan of defense that will give promise of the proper results. But at the same time I believe it is equally our duty to set before the world the example of a nation that can maintain itself by the inherent power that pertains to freedom, intelligence, and a rule of the people, for the people, and by the people.

APPENDIX.

[Remarks in Congress December 12, 1879.]

Mr. Cox. Mr. Chairman, this is an age of mechanical forces. The nation which is laggard in their application will lack in maintaining its interests and honor. The nation which is not provident by its legislation in the use of recent inventions is in constant peril. Even powers weaker, in many repeects, with the improved armanent of our time become superior to thôse who are greater in other resources. It will not do to rely on Divine Providence altogether for our future defenses. Ericcsons, with their monitors, are not to be improvised every day against the surprises of Merrimacs. The engineer may contrive, mechanical processes take time; but the nation that has both is the victor. The needle-gun gave Germany its triumph over France; the American rifle, in Turkish hands, held Russia back at Plevna. Whitworth, Whitehead, Krupp, and Armstrong, with the great establishments for making ordnance on the Continent and in Great Britain under their auspices and direction, are the real heroes of the future. They are organizing victories at their desks. Even Peru and Chili fight with weapons forged in Europe.

How much, sir, depends on the evolving of certain gases in chambers of iron; how much of destiny to nations! The problem of the invulnerable, represented by "Thunderers" and "Inflexibles," and solved by the penetrable, under certain chemical, explosive forces, is the problem of national greatness. *Maximae minimis suspendens.*

If gentlemen would know the great controlling element in our own civil war, they will find it in General Meigs's quartermaster's report of the amounts expended in mechanical forces. The superior enginery and invention of the North gave victory on many a hard-fought field to the North, despite the most conspicuous chivalry and self-sacrificing personal bravery of the South.

I make these remarks *in limine*, so as to illustrate the necessity of providing for our defense against the day of trouble and against those nations who have already superior means of warfare.

From chance remarks about my seat, I fear that the defenselessness of our coasts is not appreciated. Here is a picture of a possible peril taken from the Army and Navy Journal:

"In New York Harbor stands a fort whose largest artillery has a range of four and a half miles and throws a missile weighing four hundred and fifty pounds; a few feet beyond the four and a half miles is a European ironclad, which, unreached by the missiles of the fort, throws from its forward guns, which have a range of nine miles, twenty-five-hundred-pound shells into the heart of New York, while with its after guns it sinks a few little American ironclads, penetrating their armor with ease."

Let this picture stand for every other exposed city on our coast. It shows at a glance what the situation may be in case of foreign complications and war. As a member from the city of New York, is it not my duty to call the attention of Congress to its peculiar exposed condition? The monster guns and gun machinery of other nations turned out on the Mersey, Clyde, and Tyne, and the heavy steel armor of the ships, even of such second-class powers as Brazil, Italy, and Spain, warn us to be provident, vigilant, and progressive, if we would protect our seaports and cities and vindicate our national position.

When it is considered that the city of New York for the past five years has paid over two-thirds of the Federal revenues; that three-fifths of the foreign exports leave the port of New York; that for the past quarter of a century she has received three-fifths of the merchandise imported into the United States, and that during that period one-half of our domestic exports have left that port; and when the immense aggregate of hundreds of millions of these interests are considered, a Representative of that city would be faithless if he did not present the startling facts connected with the unguarded condition of such immense interests thus concentrated in New York city.

I do not, Mr. Speaker, criticise the sum reported by the Appropriations Committee for the armament of seacoast fortifications. It might have been increased, especially in view of the need of improved rifled cannon, which other nations already have.

Gentlemen have asked for information as to the conversion of smooth-bore guns into rifles. Some doubts were thrown over the feasibility and utility of such "conversion." Allow me, if not for the present yet for a future occasion, to insert here a statement which will remove these doubts:

"The Ordnance Bureau has very judiciously applied the meager appropriations which have been annually made by Congress for the last few years for the construction of heavy ordnance ("cutting the coat according to the cloth") to "converting" a few of the cast-iron smooth-bore guns now useless and otherwise valueless except as old material, of which the Government has many hundreds on hand, into rifled cannon of somewhat reduced caliber by boring them out to receive an interior barrel constructed of wrought-iron bars coiled into a spire and then solidly welded together by a peculiar process into a compact mass, for the manufacture of which one of the existing gun-factories has, fortunately, the requisite machinery and experienced workmen.

"The barrels or tubes are inserted into the old cast-iron casings and secured in place by a ring or collar screwed on to the muzzle of the piece, on a system adopted by the Ordnance Department after a course of preliminary experiments made at the recommendation of a commission of its officers which was sent to Europe in 1873 to examine the different systems of rifled ordnance adopted by Great Britain, Prussia, France, and other countries, and select such as they should consider preferable, or at least most suitable, for use in our country in respect to efficiency, and, pre-eminently, economy.

"In the manner described have been converted, since 1874, some one hundred and fifty of the one thousand or more of the cast-iron guns (market value 1 cent per pound) of ten inches diameter of bore, belonging to the War Department, into rifled cannon of eight inches diameter of bore, and some fifty of the eleven inches bored guns of the Navy Department into similar 8-inch rifles.

"It may be mentioned in passing that these fifty guns are the only pieces possessed by the Navy Department of modern construction, except a dozen breech-loading rifles of about 6½-inch caliber, which have been made by 'converting' 100-pounder 'Parrott' muzzle-loading rifled guns, the most serviceable of their day in use anywhere, but not calculated to sustain the heavy battering charges now necessary for service against heavily armored vessels. Being reinforced by insertion of an interior steel barrel from the rear, and supplied with breech-loading mechanism, they become again very serviceable and effective pieces of their caliber, equal to the requirements of present service.

"The cost of conversion of the 10 or 11 inch guns into 8-inch rifles is about 13 cents per pound of the finished weight of the piece, and adding 1 cent per pound for value of the useless smooth-bore gun converted we have, at the cost of 14 cents per pound, a good serviceable rifle of about eight tons weight, throwing projectiles of from one hundred and fifty to two hundred pounds, fairly comparable as to range and effective force with the best guns of similar class of the systems of Krupp, Woolwich, or Armstrong, and far below any of them in cost. Their missiles are capable of perforating the armor of most of the iron-clad war ships of Europe at a distance of 2,000 yards, but of course they could not successfully contend against the mammoth cannon of thirty-five, fifty, seventy-five, and one hundred tons weight, mounted upon some of those great floating batteries."

I trust that this statement will remove any uncertainty or doubt as to the utility of this process of "conversions."

There are other facts and suggestions referring to the armament of our fortifications which concern New York city which should be understood by the House, if not for present action, then for future consideration.

The Chief of Ordnance of the United States has again called the attention of Congress to the defenseless condition of the country. He has for many years in his annual report furnished to the Secretary of War and through him to Congress important facts touching the coast defenses.

In 1873, President Grant in his annual message referred particularly to the needs of the Ordnance Department, and in January, 1875, he sent a special message to Congress urging that body to furnish the needed legislation. No notice was taken of this appeal.

Upon Congress now rests the responsibility, and it is one of no ordinary import, looking to possibilities near or remote.

The Chief of Ordnance this year asks for less than a million of dollars, to be used for the conversion of old and for making new guns of suitable force for coast and harbor defense. (See his report for 1877, 1878, 1879, and for previous years.) The bill before us gives less than one-fifth of this sum, and therewith out of economic reasons we must be content.

At present the country is at the mercy of even the most unimportant maritime nations in the world.

It takes nearly two years to complete and test a gun of large dimensions. The first and last and only large rifled cannon ever cast in this country was delivered to the Government in January, 1878. It took just eighteen months to finish this gun. Krupp requires two years or more to make a large gun. Up to 1866 most of the improvements in ordnance originated in this country. The same is true of projectiles, powder, and gun metals.

It appears from official reports that we have on hand three hundred 15-inch smooth-bore cannon. When these were made they were the largest in the world, and up to 1866 the most powerful. They are comparatively useless now, except for conversion into 11-inch rifles, which are very effective guns.

Every city, large and small, situated on our seacoast from Maine to California is directly interested in this question of coast defense. Under no conceivable circumstances could we arm our coast fortifications effectively in a less time than three or four years, even if all the available gun-machinery in this country and all the money in the Treasury were to be placed at the disposal of the ordnance officers.

England is already bountifully supplied with modern ships and guns. She appropriates every year nearly $10,000,000 for new guns and equipments for them.

Krupp, in Germany, employs in his works about 14,000 men, and Sir William Armstrong, in England, about half that number. Our works, General Benét says, are and have been practically idle for nearly ten years.

China is keeping up with the times, and is sending agents abroad to look up improvements. For some time she has been giving orders for war material of modern description.

All the gun-factories in France are at work, and some of the most skillful American workmen and successful inventors, having nothing to do at home, are employed by them.

The Italian Government has the largest and most powerful guns in the world to-day, and a few of the most formidable iron-clad ships afloat. Several guns, each of one hundred tons' weight, were made at the works of Sir William Armstrong. The guns of the iron-clad Italian ship Duilio will pierce twenty-two inches of solid iron at a distance of 2,000 yards. By this armament Italy becomes at one bound worthy of the rank, prowess, and renown of ancient Rome along the blue sea.

The British iron-clad Inflexible carries guns that will do the same work as the Duilio's. The Inflexible carries four of eighty tons' weight each, throwing a projectile weighing nearly a ton.

If complications, at any time possible, should arise between the United States and any foreign naval power, great or small, what could we do except to submit if we were unable to resist an attack on the seacoast or the sea?

Torpedoes are useful for defense, and I am glad to see that the committee have appropriated something for the possible conflicts under water; but torpedoes, to be useful, must be protected by guns. For assault they are useless. Whether or not they would, if operated on a large scale, prove a safe and reliable instrument of warfare within the limit claimed for them, is not yet a settled question. Who that is intelligent doubts that the method of destroying torpedoes is perfectly understood by naval and engineer officers of all nations? (See page 5, report of United States Engineers for 1879.)

River and harbor improvements are regarded as expedient and important, but if our coast and the entrance to our great rivers and harbors are not protected, internal improvements will not amount to much.

The maximum of iron plating for ships having been reached, and the guns that will pierce the heaviest armor that a ship will float having been made and proved to be sufficient, what is to be gained by waiting, at great risk, to see if other improvements are to be introduced, when we are sure that we are already very far behind all foreign naval powers in respect to both ships and guns? I am thinking only of defensive war now. Preparations for offensive war need not of necessity be hurriedly made.

The Spanish navy is much superior to ours in the number of vessels and their grade. It is made up of one hundred and forty-eight vessels of all classes, and eight hundred and nine guns, mostly rifles and heavy Rodman smooth-bores. Six of these ships are first-class iron-clad frigates, and seven others are of the second class of armored ships.

In our own Navy, according to the report of the Secretary, we have eighty-one ships of all classes; and to this number is to be added four monitors and eight tugs, which can be fitted for cruisers or torpedo-boats, making a total of ninety-three vessels that could in time be fitted for service.

We have not a sea-going iron-clad in our Navy. Monitors can not remain at sea, even if they could be kept afloat in all weather; they can not carry a supply of fuel for more than a few days and do not carry sail. Their turret ports are so near the water that in rough weather they could not be opened; and, more than all, an 8-inch rifle at sixty yards can riddle their turret plating in half an hour.

The piercing power of an 8-inch rifle is, theoretically, nine and eight-tenths inches at five hundred yards and nine and five-tenths at one thousand yards. A target of 11-inch laminated plates is equal in resistance to six inches of solid iron platings. Our monitors are covered with eleven inches of plates, each of one inch thickness, laid one over another, and at short range could not resist the 8-inch rifle of the Spanish navy, or any other, and would be destroyed by a gun of larger caliber at long range.

The cost of a steel gun is about double that of a cast-iron gun of equal dimensions, and, in the opinion of experts, the steel has not proved as good as the iron gun.

Krupp's steel guns have broken in several instances. Some years since a 10-inch cast-iron smooth-bore was tested to the utmost of its strength. It was loaded with an extra charge of powder and double shotted, and in various ways severely tried, and not until the tenth round, when the gun was filled nearly to the muzzle with powder, shot, and shell, was it broken. Of course such a test, in the legitimate use of any gun, would not be made.

Our one large rifle (12¼-inch), now at Sandy Hook, cost about $28,000. This gun has proved the equal, if not the superior, of any gun of foreign manufacture of equal caliber. It throws a shot weighing from six hundred to seven hundred pounds. (See report of Chief of Ordnance for 1878, in which, for results, the American gun is pronounced "decidedly" superior to the Krupp and Italian guns, which use heavier charges than are required for ours to do the same work that they do.)

Herr Krupp, in response to a proposal from our officers to give a price for a 12-inch rifle, offered to manufacture and place on board ship for transportation a 12-inch rifle for the sum of $50,000 in gold, the conditions being that the gun should be tested under his own supervision. This is nearly double the cost of an American cast-iron gun of superior capacity and, as experience proves, equally safe and effective.

But it is doubtful if a steel gun can be made in this country. We lack the necessary machinery to do the work even if suitable metal were at hand. Nor is it in any respect important or desirable to substitute steel for iron in the fabrication of heavy ordnance even if the cost of material were the same in one case as in the other. Expert officers have demonstrated this fact over and over again, and no better authority than this can be found or is needed.

Whether guns should be made of steel or iron is a question for the responsible officers of the Government to determine and not one for interested parties outside to deal with. Upon such a subject one who is not an expert should defer to those who have given the best study of their lives to the technics belonging to this subject.

Because we have escaped the penalties of our indifference so many years, is no guarantee of such good fortune in the future. The property-owners of New York, Boston, Philadelphia, and Baltimore, and the coast cities generally, North and South, will hold somebody responsible for this perilous condition when the situation is thoroughly understood.

Economy, based upon the idea that we can afford to postpone the work of suitably equipping our fortifications until a crisis arises, may prove a delusion, and of course will, if we postpone action long enough.

If a foreign power desires to bring on a war with us, for any purpose whatever, the fact that we are helpless and unprepared will stimulate the motive to hunt for a pretext.

A government based upon the will of fifty millions of people, rich, prosperous, and abounding in resources, without the common means of defense of its honor and interests, presents a sorry spectacle to the world.

Of course, Mr. Speaker, a member of this House of my economic notions, yesterday expressed, both as to domestic frugality and foreign trade—loving and believing in the persuasive influences of free intercourse and reciprocal advantages—would naturally be disinclined to vote inordinate outlays for harbor defenses. He would prefer the cheap defense of fair customs duties and enlarged liberalities; but the millennium which ushers in his idealities has not yet begun to dawn, and he must consider contingencies of ominous aspect.

Am I told that there is no danger of a breaking out of hostilities with other countries, and therefore no need of making appropriations for the armament of our forts? The time has not yet come for the lion and the lamb to lie down together; the plowshare and pruning-hook are liable at any time to be converted into the bayonet and sword. The history of recent wars in Europe, Asia, and Africa is a lesson of warning to us. Our increasing trade and growing relations with other countries admonish us to be ready at least for defense, if not for aggression.

Think of our critical relations with Spain. How often in late years have we been on the verge of conflict with Spain! Her present commercial relations with us are a perpetual menace. Her tariff so discriminates against this country that it is almost robbery. When we consider our exports and imports to Cuba alone, the discrimination against us is so marked an evidence of selfishness and enmity that it is almost a *casus belli*. For five years, from 1872 to 1876, we bought of Cuba on an average each year goods to the value of $71,364,327, while we sold but $15,466,139. This leaves the enormous balance against us of $55,898,188. During these years we purchased of Cuba to the amount of $356,821,638, while Cnba only bought in all $77,330,690, leaving a trade balance against us of $279,490,940. During the past twenty years Cuban exports to the United States have increased at least 100 per cent. over our exports to Cuba, which have remained stationary. We have been Spain's best customer, especially in sugars. Yet how shabbily and meanly are we treated by her. The Spanish tariff favors her own vessels to such an extent as to deny to us advantages given other countries. Here is a statement of this rank injustice:

A barrel of flour of Spanish production imported in a Spanish vessel would pay a duty of $2.25.

The same flour imported in a foreign vessel would pay $4.50.

A barrel of flour of foreign production imported in a Spanish vessel from any country except the United States would pay $4.69½.

The same flour imported in a foreign vessel would pay $5.51.

The discrimination against the United States can be realized when it is understood that a barrel of flour imported thence direct, either in a Spanish or foreign vessel, would have to pay the last-named duty, while if it were sent to Canada and shipped from there it would be subject only to the third class, or $4.69½, if shipped under the Spanish flag. Or, in other words, flour shipped direct from the United States, even in a Spanish vessel, would pay 40 per cent. more than Canadian flour, or the same flour shipped by way of Canada, in a similar vessel.

Do you say that this kind of tariff will be ameliorated? Never while we are at the mercy of Spain's eight hundred rifled guns, her six first-class iron-clads, and her armored ships; never while the city of New York can be placed under these guns and exactions made by the hundred millions.

Is it not, therefore, wise and prudent to prepare, even by so small an appropriation, for the armament of our fortifications, that we may back our negotiations by proper force, and make our country respected for its position as a power on the earth?

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